



TREASURY DEPARTMENT  
WASHINGTON, D.C. 20220

OFFICE OF  
DIRECTOR OF THE MINT

July 27, 1967

Mr. John J. Ford, Jr.  
Numismatist  
176 Hendrickson Avenue  
Rockville Centre, L. I., N. Y.

Dear Mr. Ford:

I have before me your most interesting letter concerning your continuing study of California gold coins struck by the "U. S. Assay Office of Gold," at San Francisco, California, dated 1853.

In an effort to place your questions in proper perspective, our technical people feel that we should review the situation surrounding Mint problems, including availability of refined metals during the early history of the Mint.

The Act of April 2, 1792, which established the first U. S. Mint, stated that gold coins were to be composed of "gold, silver, and copper." The Eagle was to contain  $247\frac{1}{2}$  grains of pure gold or 270 grains of standard gold. The coin was to consist of 916.6 parts per thousand of gold, the balance of the alloy being "silver and copper, in such proportions not exceeding one half silver . . . ."

The Act of January 18, 1837, provided that the standard for gold coins should be "that of 1000 parts by weight, 900 shall be of pure metal, and 100 of alloy; and the alloy of the gold coins shall be of copper and silver, provided that the silver do not exceed one-half of the whole alloy."

The Coinage Act of February 12, 1873, provided "that the alloy of gold coin shall be of copper, or of copper and silver; but the silver shall in no case exceed one-tenth of the whole alloy."

The reduction in the permissible amount of silver accomplished by the later legislation, was simply taking into account the progress that had occurred in the extraction and refining of gold bullion.

The ancient practice, and one used extensively in the early steps of development of the California gold lodes, consisted of exposure of native grains of gold or crudely crushed and pulverized gold ores to a high temperature in a crude furnace lined with bone ash. If subjected



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to a blast of air when molten, virtually all of the base metals, by this fire refining procedure, were oxidized and retained in the bone ash, leaving a precious metal button.

The gold button always contained silver, and depending upon the skill with which the work was done, a certain amount of copper. Such metal was accepted by the Mints as "unparted." Such fire refined deposits, if they met the Mint's empirical test for "toughening," were blended together after assay so as to make coinage ingots that would meet statutory requirements.

In short, it was not until just prior to the passage of the Act of 1873, that other refining methods employing acid processes, provided for the separation and purification of gold and silver. Thus, the amount of silver in gold coins could be reduced to not more than "one-tenth of the whole alloy."

It is probable that private coins of the period were made under similar conditions; i.e., the presence of varying amounts of silver and copper in such coins is to be expected. Private coins were not required to meet the above composition requirements.

Based upon the above background and the analyses of the subject gold coins as reported by the Museum of Fine Arts, Boston, we are able to conclude as follows regarding the pieces:

1. The three coins do not meet the legal requirements as to fineness for United States coins manufactured during the period.
2. The amounts of gold contained in the coins, as reported, range from 88 to 91%. These are reasonably close to what might have been expected of a private mint producing nominally 900 fine pieces at that time.
3. The silver content of the coins ranges from 8.0 to 9.0%. This is approximately twice the permitted amount for United States coins, but would seem to represent reasonably good private practice in line with the state of the art during the period.

However, in our opinion, a counterfeiter could have made up and produced alloys of the same compositions at any time since the coins were first manufactured. Our only interpretation of the analytical results is that they do not conclusively prove the coins to be counterfeit.

Your letter states, in part, "The coins turned out to have entirely different amounts of both gold and silver, the amounts being mathematically



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even and apparently the result of deliberate intent on the part of the makers rather than the result of chance. It is now my thought that I have hit upon just about positive evidence that these coins are anything but false, and that they are clearly the result of United States Assay Office experimentation."

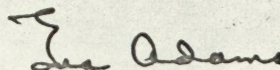
Our technical staff does not believe these conclusions are justified. Since we do not have available the specific tolerances which were maintained by the United States Assay Office of Gold in the manufacture of its coins, we feel that the amounts of gold and the amounts of silver contained in the three questioned pieces are substantially the same, rather than "entirely different." Also, we feel that you are misinterpreting the reported analytical values as being "mathematically even." This matter can be determined by your discussing the matter with the analysts, but we interpret the gold analysis results as having been reported to the nearest 1%. That is to say, Examination No. 67.12 reports Gold as 88.0%, meaning that the gold content probably is nearer to 88% than it is to either 87 or 89%. It is likely that the results are an average of several reliable assay determinations which has been rounded off to the nearest full percent. Further, since the three alloys would be indistinguishable in their manufacturing and coining properties it is not likely that any mint would have considered making them as "experimental metal alloys."

Based on our experience with counterfeit United States Gold Coins, we feel that there have been many places throughout the world, during the past ten years, where such pieces as those in question could have been counterfeited profitably if they could have been marketed at \$150 or more.

We regret that we have not been of more assistance to you in this matter, but we feel that you must rely on more conclusive evidence than composition by x-ray fluorescent analysis to conclude that you "have hit upon just about positive evidence that these coins are anything but false." While such analyses may prove that a questioned coin is not what it is purported to be, they cannot prove that such a piece is genuine. Additional evidence is necessary.

If there is additional information which we might be able to furnish, we shall do our best to assist you.

Sincerely,



Eva Adams

Director of the Mint